

ABSTRACT OF THE DISCLOSURE

A lithium battery includes an electrolyte comprised of a non-aqueous solvent, and a salt mixture. The salt mixture includes an alkali metal electrolyte salt and an additive salt having an anion of a mixed anhydride of oxalic acid and boric acid. Specific additive salts include lithium bis(oxalato) borate and lithium oxalyldifluoroborate. Particular electrolyte salts comprise LiPF_6 and LiBF_4 . The additive salt is present in an amount of 0.1-60 mole percent of the total of the additive salt and electrolyte salt content of the electrolyte. Also disclosed is a method for enhancing the performance characteristics of a lithium battery through the use of the electrolyte composition. Also disclosed is the compound lithium oxalyldifluoroborate.